REMARKS

The non-final Office Action dated January 12, 2006 has been reviewed. Applicant has amended claims 1, 2 and 4. Applicant has added new claims 6-10. Claims 1-10 are pending.

1. Summary of the Claimed Subject Matter

Referring to the attached annotated Figs. 1-2, and Fig. 3 of Applicant's specification, Applicant's invention relates generally to a rock drilling rig including a carrier 1, a feeding beam 3, a rock drilling apparatus 4 movable in relation to the feeding beam, one or more sensors 11, 12 arranged to the rock drilling apparatus 4 to measure the operation of the rock drilling apparatus 4, and a first control unit 8 arranged on the carrier 1 of the rock drilling rig to control the operation of the rock drilling apparatus 4 on the basis of measuring information received from the sensors 11, 12. Applicant's invention includes a second control unit 9 arranged to the rock drilling apparatus 4. The second control unit 9 includes a memory unit 9a for storing basic settings for the rock drilling apparatus 4 and a processing unit 9b for calculating parameters describing the operating state of the rock drilling apparatus 4 on the basis of the basic settings and measuring information.

As described at paragraphs 0016-0017, and illustrated in Fig. 3 of Applicant's specification, the second control unit 9 may be arranged inside a body 4a of the rock drilling apparatus 4, where it is protected from the ambient conditions and dents. The individual basic settings of each drilling apparatus type can be stored in the memory unit 9a. The basic settings depend on the construction and size category of the drilling apparatus 4. The basic settings include information on the impact pressure used in the drilling apparatus 4, volume flow of the

rotating device 7, volume flow of flushing, feeding pressure, etc. The processing unit 9b may include a computer, programmable logic, or the like able to process the entered information. Further, the one or more sensors 11, 12 may be integrated to the second control unit 9. For example, sensor 11 is arranged to monitor the operation of the percussion device 5, and sensor 12 is arranged to monitor the operation of the rotating device 7. Further, measuring information may be transmitted to the second control unit 9 from a sensor 15 that is arranged to monitor the feeding of flushing medium.

As described at paragraphs 0018-0019, control commands and a drilling plan may be entered into the first control unit 8 via a user interface such as controller 16. The first control unit 8 informs the second control unit 9 how the rock drilling apparatus 4 should operate, based on the drilling plan and control commands. After the basic settings of the drilling apparatus 4 and the prevailing situation, *i.e.* operating state, have been taken into consideration, the second control unit 9 informs the first control unit 8 what external resources it needs to perform the required operation. In this regard, the processing unit 9b of the second control unit 9 forms parameters that are transmitted to the first control unit 8, where the parameters are compared with the instructions entered into the first control unit 8. On the basis of the comparison, the first control unit 8 adjusts actuators affecting the operation of the drilling apparatus 4. For example, as illustrated in Fig. 3, the first control unit 8 adjusts a first valve 19 that is arranged in a pressure medium channel 21 leading to the percussion device 5. Further, the first control unit 8 adjusts a second valve 30 that is arranged in a pressure medium channel 22 leading to the rotating device 7. A third valve 25 arranged in a channel 24 leading to a feeding cylinder 25 and a fourth valve 27 arranged in a flushing medium channel 26 are adjusted correspondingly. Further, pumps 28

and 29 can also be adjusted. By adjusting the percussion device, rotating device, the feeding and flushing of the drill, for instance, the drilling apparatus may be directed to operate exactly in the desired manner.

As described at paragraph 0007 of Applicant's specification, because the prevailing operating state of the drilling apparatus 4 is defined in the drilling apparatus 4, the control unit 8 arranged on the carrier 1 can be a relatively simple one. Because the equipment for defining the operating state of an individual drilling apparatus 4, *i.e.* the sensors and second control unit 9, is arranged to the drilling apparatus, the replacement of the entire drilling apparatus 4 or a later modification of the original drilling apparatus is simple and does not cause difficult changes to the control system in the rock drilling rig.

Independent Claim 1

With respect to claim 1, as described beginning at paragraphs 0013-0019, and illustrated in Figs. 1-3, an exemplary rock drilling rig includes a carrier 1, at least one feeding beam 3, a rock drilling apparatus 4 movable in relation to the feeding beam 3 and having a percussion device 5, one or more sensors 11, 12 arranged to the rock drilling apparatus 4 to measure the operation of the rock drilling apparatus 4, at least one first control unit 8 arranged on the carrier 1 of the rock drilling rig to control the operation of the rock drilling apparatus 4 on the basis of measuring information received from the sensors 11, 12, a second control unit 9 arranged to the rock drilling apparatus 4, and a data communications link 10 between the first control unit 8 and the second control unit 9 for transmitting information between the control units 8, 9. The sensors 11, 12 monitor the operation of the rock drilling apparatus 4 and are connected to transmit

measuring information to the second control unit 9. The second control unit 9 includes a memory unit 9a for storing basic settings for the rock drilling apparatus 4 and a processing unit 9b for calculating parameters describing the operating state of the rock drilling apparatus 4 on the basis of the basic settings and measuring information, whereby the prevailing operating state of the drilling apparatus 4 is defined in the drilling apparatus 4. The first control unit 8 is arranged to control the operation of the rock drilling apparatus 4 on the basis of the parameters received from the second control unit 9 and instructions given to the first control unit 8.

Independent Claim 4

With respect to claim 4, as described beginning at paragraphs 0013-0019, and illustrated in Figs. 1-3, an exemplary rock breaking machine 4 includes a body 4a, a percussion device 5 arranged inside the body 4a to generate impact pulses to a tool 6 connectable to the rock breaking machine 4, one or more sensors 11, 12 arranged to measure the operation of the rock breaking machine 4, and a control unit 9. The sensors 11, 12 are arranged to transmit measuring information to the control unit 9. The control unit 9 includes a memory unit 9a for storing basic settings for the rock breaking machine 4 and further a processing unit 9b that is, during operation, arranged to form parameters describing the operating state of the rock breaking machine 4 on the basis of the basic settings and measuring information. The control unit 9 includes a connection to a data communications link 10 that enables communication between the control unit 9 and at least one control unit 8 external to the rock breaking machine 4 for controlling the operation of the rock breaking machine 4 so as to achieve the desired operating state of the rock breaking machine 4.

Independent Claim 6

With respect to claim 6, as described beginning at paragraphs 0013-0019, and illustrated in Figs. 1-3, an exemplary rock breaking machine 4 includes a body 4a, a percussion device 5 arranged inside the body 4a to generate impact pulses to a tool 6 connectable to the rock breaking machine 4, one or more sensors 11, 12 arranged to measure the operation of the rock breaking machine 4, and a control unit 9 arranged inside the body 4a of the rock breaking machine 4. The sensors 11, 12 are arranged to transmit measuring information to the control unit 9. The control unit 9 includes a memory unit 9a for storing basic settings for the rock breaking machine 4 and further a processing unit 9b that is, during operation, arranged to form parameters describing the operating state of the rock breaking machine 4 on the basis of the basic settings and measuring information. The control unit 9 includes a connection to a data communications link 10 that enables communication between the control unit 9 and at least one control unit 8 external to the rock breaking machine 4 for controlling the operation of the rock breaking machine 4 so as to achieve the desired operating state of the rock breaking machine 4.

Independent Claim 7

With respect to claim 7, as described beginning at paragraphs 0013-0019, and illustrated in Figs. 1-3, an exemplary rock drilling apparatus 4 is arranged movable in relation to a feeding beam 3 and includes a body 4a, a percussion device 5 arranged inside the body 4a to generate impact pulses to a tool 6 connectable to the rock drilling apparatus 4, one or more sensors 11, 12 arranged to measure the operation of the rock drilling apparatus 4, and a control unit 9. The

sensors 11, 12 are arranged to transmit measuring information to the control unit 9. The control unit 9 includes a memory unit 9a for storing basic settings for the rock drilling apparatus 4 and further a processing unit 9b that is, during operation, arranged to form parameters describing the operating state of the rock drilling apparatus 4 on the basis of the basic settings and measuring information. The control unit 9 includes a connection to a data communications link 10 that enables communication between the control unit 9 and at least one control unit 8 external to the rock drilling apparatus 4 for controlling the operation of the rock drilling apparatus 4 so as to achieve the desired operating state of the rock drilling apparatus 4.

Independent Claim 8

With respect to claim 8, as described beginning at paragraphs 0013-0019, and illustrated in Figs. 1-3, an exemplary rock breaking hammer 4 includes a body 4a, a percussion device 5 arranged inside the body 4a to generate impact pulses to a tool 6 connectable to the rock breaking hammer 4, one or more sensors 11, 12 arranged to measure the operation of the rock breaking hammer 4, and a control unit 9. The sensors 11, 12 are arranged to transmit measuring information to the control unit 9. The control unit 9 comprises a memory unit 9a for storing basic settings for the rock breaking hammer 4 and further a processing unit 9b that is, during operation, arranged to form parameters describing the operating state of the rock breaking hammer 4 on the basis of the basic settings and measuring information. The control unit 9 comprises a connection to a data communications link 10 that enables communication between the control unit 9 and at least one control unit 8 external to the rock breaking hammer 4 for

controlling the operation of the rock breaking hammer 4 so as to achieve the desired operating state of the rock breaking hammer 4.

Independent Claim 9

With respect to claim 9, as described beginning at paragraphs 0013-0019, and illustrated in Figs. 1-3, an exemplary a rock drilling rig includes a carrier 1, at least one feeding beam 3, a rock drilling apparatus 4 movable in relation to the feeding beam 3 and having a percussion device 5, one or more sensors 11, 12 arranged to the rock drilling apparatus 4 to measure the operation of the rock drilling apparatus 4, at least one first control unit 8 arranged on the carrier 1 of the rock drilling rig to control the operation of the rock drilling apparatus 4 on the basis of measuring information received from the sensors 11, 12, a second control unit 9 arranged to the rock drilling apparatus 4, and a data communications link 10 between the first control unit 8 and the second control unit 9 for transmitting information between the control units 8, 9. The sensors 11, 12 monitor the operation of the rock drilling apparatus 4 and are connected to transmit measuring information to the second control unit 9. The second control unit 9 includes a memory unit 9a for storing basic settings for the rock drilling apparatus 4 and a processing unit 9b for calculating parameters describing the operating state of the rock drilling apparatus 4 on the basis of the basic settings and measuring information. The second control unit 9 is arranged to inform the first control unit 8 about external resources that the second control unit 9 needs to perform a required operation. The first control unit 8 is arranged to adjust actuators 19, 25, 27, 30 affecting the operation of the rock drilling apparatus 4 on the basis of the parameters received from the second control unit 9 and instructions given to the first control unit 8.

Independent Claim 10

With respect to claim 10, as described beginning at paragraphs 0013-0019, and illustrated in Figs. 1-3, an exemplary rock drilling rig includes a carrier 1, at least one feeding beam 3, a rock drilling apparatus 4 movable in relation to the feeding beam 3 and having a percussion device 5, one or more sensors 11, 12 arranged to the rock drilling apparatus 4 to measure the operation of the rock drilling apparatus 4, at least one first control unit 8 arranged on the carrier 1 of the rock drilling rig to control the operation of the rock drilling apparatus 4 on the basis of measuring information received from the sensors 11, 12, a second control unit 9 arranged to the rock drilling apparatus 4, and a data communications link 10 between the first control unit 8 and the second control unit 9 for transmitting information between the control units 8, 9. The sensors 11, 12 monitor the operation of the rock drilling apparatus 4 and are connected to transmit measuring information to the second control unit 9. The second control unit 9 includes a memory unit 9a for storing basic settings for the rock drilling apparatus 4 and a processing unit 9b for calculating parameters describing the operating state of the rock drilling apparatus 4 on the basis of the basic settings and measuring information. The first control unit 8 is arranged to control the operation of the rock drilling apparatus 4 on the basis of the parameters received from the second control unit 9 and instructions given to the first control unit 8. The first control unit 8 is arranged to adjust a first valve 19 arranged in a pressure medium channel 21 leading from a pump 29 to the percussion device 5, whereby the first control unit 8 is arranged to control external resources of the drilling apparatus 4.

2. Grounds of Rejection

The rejections are as follows, all rejections being traversed.

Claims 1-3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,934,387 to Tuunanen ("Tuunanen") in view of U.S. Patent No. 5,560,437 to Dickel et al. ("Dickel").

Claim 4 is rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,699,261 to Muona ("Muona").

Claim 4 is rejected under 35 U.S.C. 102(b) as being anticipated by Tuunanen.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Tuunanen.

3. Arguments

The Rejection of Claims 1-3 under 35 U.S.C. § 103(a)

Claims 1-3

Applicant respectfully submits that claims 1-3 are allowable over the applied art for at least the following reasons, and that the rejection of claims 1-3 under 35 U.S.C. § 103(a) should be withdrawn.

Tuunanen is assigned to the real party in interest in the instant application, *i.e.* Sandvik Tamrock Oy of Finland. Tuunanen is directed to a method for determining the position of a feed beam 3a-3c of a rock drilling equipment so that first, the position of a base 1 of the rock drilling equipment relative to rock is determined in a general system of coordination, and after that, the position of the feed beam 3a-3c relative to the base 1 is measured. *See* Abstract of Tuunanen.

As described at col. 3, ll. 7-66, and illustrated in Fig. 1 of Tuunanen, feed beams 3a-3c are connected to booms 2a to 2c, which in turn are connected to a base 1 of a rock drilling equipment. A rock drill 4a-4c moves on each feed beam in its longitudinal direction, and a drill rod tool 5a -5c is connected to each rock drill.

Measuring devices 6a-6c are attached to the base 1 in a fixed position relative to the base. The measuring devices are connected to a control unit 7 located on the base 1. Further, a separate measuring unit 8 is connected to the control unit 7. The measuring unit 8 can operate in the same way as the fixed measuring devices 6a-6c. Measuring devices 9a-9c and 10a-10c are further mounted in each feed beam 3a-3c. The measuring devices 6a-6c, 8, 9-9c and 10-10c can all be either transmitters, receivers or transmitter-receivers. However, either all the measuring devices 9a-9c and 10a-10c, or alternatively the fixed measuring devices 6a-6c in the base 1, can be only transmitters and the others receivers, respectively.

The base 1 is driven to a drilling site and its position in the general system of coordination relative to the rock is determined. Then, the position of each feed beam 3a-3c can be determined in the general system of coordination by means of the measuring devices 6a-6c, 8, 9a-9c and 10a-10c, and by means of information indicating the position of the base and converting this mathematically into the position of each feed beam in the general system of coordination. In this regard, the measuring devices 9a-9c and 10a-10c are transmitters that transmit a certain kind of oscillation energy, *i.e.*, a measuring signal. The signals transmitted by the measuring devices of each feed beam 3a-3c are measured separately and the control unit 7 calculates on the basis of their propagation time the distances and directions of each measuring device in the base to a corresponding measuring device.

As described at col. 4, ll. 14-28, if for some reason a measuring device of the feed beam should not be able to transmit reliably, one or more separate measuring units 8 can also be used which is placed in a suitable position under the booms. The position of the measuring unit 8 relative to the base is measured with the fixed measuring devices 6a-6c of the base. The measuring unit 8 can be used for measuring the signals transmitted by the measuring devices 9a-9c and 10a-10c.

It is respectfully submitted that Tuunanen in combination with Dickel fails to teach or suggest Applicant's invention recited in claim 1 for at least the following reasons.

Tuunanen does not disclose anywhere that any measuring device is arranged to the rock drilling apparatus 4a-4c. Thus, Tuunanen does not teach or suggest the features of one or more sensors arranged to the rock drilling apparatus to measure the operation of the rock drilling apparatus, as recited in claim 1. Because Tuunanen does not show such sensors, Tuunanen can not show at least one first control unit arranged on the carrier of the rock drilling rig to control the operation of the rock drilling apparatus on the basis of measuring information received from the sensors, as recited in claim 1.

Furthermore, Tuunanen does not disclose any second control unit arranged to the rock drilling apparatus 4a-4c. Tuunanen only discloses one single control unit 7 placed on the carrier 1 of the rock drilling rig. In this regard, it is noted that measuring unit 8 is merely a transmitter and/or receiver. Thus, Tuunanen does not teach or suggest the features of a second control unit arranged to the rock drilling apparatus, as recited in claim 1. Because Tuunanen does not show a second control unit, Tuunanen can not show the following features recited in claim 1:

a) a data communications link between the first control unit and the second control unit for transmitting information between the control units;

b) the sensors monitoring the operation of the rock drilling apparatus are connected to transmit measuring information to the second control unit;

c) the second control unit comprises a memory unit for storing basic settings for the rock drilling apparatus and a processing unit for calculating parameters describing the operating state of the rock drilling apparatus on the basis of said basic settings and measuring information, whereby the prevailing operating state of the drilling apparatus is defined in the drilling apparatus; and

d) the first control unit is arranged to control the operation of the rock drilling apparatus on the basis of the parameters received from the second control unit and instructions given to the first control unit.

Applicant respectfully submits that Dickel fails to overcome the above-described deficiencies of Tuunanen. Dickel is directed to a telemetry system for obtaining loggings in a cable-drilled borehole by an independently guided logging probe having a sensor, such that the logging probe is ejected in a drill string and the sensor projects through a drill bit of the drill string. At col. 3, ll. 6-66, and Figs. 1-2 of Dickel, there is described and illustrated a probe 1 in a borehole 12, and a pickup probe 2 in a well string 3 that is in the borehole 12. The probe 1 is conveyed to its logging location in the region of a drill bit 5 by drilling mud. The pickup probe 2 is also driven by the drilling mud along the string 3 until it is in a working position directly behind the logging probe 1. The pickup probe 2 is mounted on a borehole-logging cable 4 that is braked on paying out and tensioned on drawing in by a logging-cable pulley 13. The borehole

logging cable 4 is connected to a logging cart 42 in which is mounted a laptop PC 7. The logging probe 1 and pickup probe 2 are connected wirelessly to each other in the working position. The logging probe 1 has a sensor 47 which can reach through a logging aperture in a drill bit 5 for direct mechanical contact with the floor and walls of the borehole 12 in order to collect loggings about the composition of the subsurface and the borehole walls. The logging probe 1 and the pickup probe 2 inter-engaged to form a logging and transmitting unit in a data-transmission position. A wireless data transmission from the laptop PC 7 to the logging probe 1 is facilitated in order to initialize it and to synchronize it with the laptop PC 7. The logging probe 1 is able to receive logging data and store it in data memory 19. The pickup probe 2 can be pulled by the logging-cable winch 13 out of the borehole 12. The logging data is read as the bore string 3 is pulled out of the borehole 12.

The Office Action relies on logging probe 1 of Dickel for a teaching of a second control unit, as recited in claim 1. Applicant submits that such an assertion is clearly in error. Logging probe 1 merely collects loggings and is in no way a control unit. Moreover, Dickel does not show anywhere one or more sensors arranged to the rock drilling apparatus to measure the operation of the rock drilling apparatus, as recited in claim 1. The sensor 47 of the logging probe 1 merely collects loggings. Therefore, a combination of Tuunanen and Dickel still fails to teach or suggest the combination of features recited in claim 1. MPEP § 2143.03 points out that "[t]o establish prima facie obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)."

Moreover, even if it was determined that Dickel discloses a second control unit and one or more sensors arranged to the rock drilling apparatus to measure the operation of the rock

drilling apparatus, Applicant submits that there is no motivation to combine Tuunanen and Dickel to teach or suggest features recited in claim 1 such as:

a) a data communications link between the first control unit and the second control unit for transmitting information between the control units;

b) the sensors monitoring the operation of the rock drilling apparatus are connected to transmit measuring information to the second control unit;

c) the second control unit comprises a memory unit for storing basic settings for the rock drilling apparatus and a processing unit for calculating parameters describing the operating state of the rock drilling apparatus on the basis of said basic settings and measuring information, whereby the prevailing operating state of the drilling apparatus is defined in the drilling apparatus; and

d) the first control unit is arranged to control the operation of the rock drilling apparatus on the basis of the parameters received from the second control unit and instructions given to the first control unit.

MPEP § 2141 instructs that "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention." MPEP § 2143 instructs that "the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ 1438 (Fed. Cir. 1991)." The Federal Circuit has clearly held that "the motivation to combine references cannot come from the invention itself." Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 30 USPQ 2d 1377 (Fed. Cir. 1993).

Moreover, MPEP § 2143.01 instructs that "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ 2d 1430 (Fed. Cir. 1990)." MPEP § 2143.01 further instructs that "[a]lthough a prior art device 'may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so."

Claims 2 and 3 depend from claim 1 and recite the same combination of allowable features recited in independent claim 1, as well as additional features that define over the applied reference.

The Rejection of Claim 4 under 35 U.S.C. § 102(b) by Muona

Claim 4

Applicant respectfully submits that claim 4 is allowable over the applied art for at least the following reasons, and that the rejection of claim 4 under 35 U.S.C. § 102(b) should be withdrawn.

Muona is assigned to the real party in interest in the instant application, *i.e.* Sandvik Tamrock Oy of Finland. Muona is directed to a control system in rock drilling equipment. A control unit includes an electronic basic set-value memory storing set values for operating parameters of different operating means, and a separate electronic operator set-value memory in which the operator can store set values he wants to give to the operating parameters of the different operating means. As described at col. 2, line 34 – col. 3, line 49, and illustrated in the Figure, the control arrangement of Muona includes an electronic control unit 1, a keyboard 2, a

basic set-value memory 3, and an operator set-value memory 4 for storing the set values desired by the operator. The control unit 1 controls operating means 6 through an operation unit 5. The operating means 6 collectively refers to various drives, such as a hydraulic cylinder, a rotation motor for a rock drill, a percussion machinery, a feed motor or other drive device associated with the operation of the boom or the rock drill.

When the equipment is being manufactured, the manufacturer programs the basic set-value memory 3 of the control unit 1 so that when the control unit is used, it obtains the control and operating parameters of the different operating means from the basic set-value memory 3. When the operator, that is, the driller, wants to alter the set values, he may feed them by the keyboard 2 into the operator set-value memory 4. Values that have not been altered by the operator are thus obtained from the basic set-value memory 3, and values that have been altered are obtained from the operator set-value memory 4.

A diagnosing unit 7 compares the control values inputted by the operator by a control member 8, such as a joystick, with the actual values of the control values applied from the control unit 1 to the operating means 6. The diagnosing unit 7 is connected to monitor the control value applied by the control member 8 to a control line 9 and the adjustment value applied by the control unit 1 or the operation unit 5 to an adjustment line 10 for the operating means. The diagnosing unit monitors these values and indicates the operation by a separate indicating element 11. Diagnosing can be done in such a manner that the control value of the control member 8 is merely compared with the adjustment value applied from the control unit 1 or the operation unit 5 to the operating means. If the values differ from each other by more than

a predetermined maximum difference value, the indicating element 11 can indicate the difference. It is thus easy to detect whether there is a failure in the equipment.

It is respectfully submitted that Muona fails to teach Applicant's invention recited in claim 4 for at least the following reasons.

Muona does not disclose one or more sensors arranged to measure the operation of the rock breaking machine, and the sensors are arranged to transmit measuring information to the control unit, as recited in claim 4. Diagnosing unit 7 monitors the control value applied to control line 9 and the adjustment value applied to an adjustment line 10. Diagnosing unit 7 does not measure the operation of operation means 6. Moreover, diagnosing unit 7 does not transmit measuring information to control unit 1 or operation unit 5. Therefore, Muona fails to teach the combination of features recited in claim 4. As pointed out in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim." Thus, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. Of California, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987)."

The Rejection of Claim 4 under 35 U.S.C. § 102(b) by Tuunanen

Claim 4

Applicant respectfully submits that claim 4 is allowable over the applied art for at least the following reasons, and that the rejection of claim 4 under 35 U.S.C. § 102(b) should be withdrawn.

It is respectfully submitted that Tuunanen fails to teach Applicant's invention recited in claim 4 for at least the following reasons.

Tuunanen does not disclose one or more sensors arranged to measure the operation of the rock breaking machine, as recited in claim 4. Measuring devices 6a-6c, 8, 9a-9c and 10a-10c of Tuunanen determine the position of each feed beam 3a-3c in a general system of coordination.

Tuunanen does not disclose a control unit including a memory unit for storing basic settings for the rock breaking machine and further a processing unit that is, during operation, arranged to form parameters describing the operating state of the rock breaking machine on the basis of the basic settings and measuring information, as recited in claim 4. In Tuunanen, the signals transmitted by the measuring devices of each feed beam 3a-3c are measured separately and the control unit 7 calculates on the basis of their propagation time the distances and directions of each measuring device.

Tuunanen does not disclose the control unit includes a connection to a data communications link that enables communication between the control unit and at least one control unit external to the rock breaking machine for controlling the operation of the rock breaking machine so as to achieve the desired operating state of the rock breaking machine, as recited in claim 4. Tuunanen discloses only one control unit 7.

Therefore, Tuunanen fails to teach the combination of features recited in claim 4. As pointed out in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim." Thus, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. Of California, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987)."

The Rejection of Claim 5 under 35 U.S.C. § 103(a) by Tuunanen

Claim 5

Applicant respectfully submits that claim 5 is allowable over the applied art for at least the following reasons, and that the rejection of claim 5 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 5 depends from claim 1 and recites the same combination of allowable features recited in independent claim 1, as well as additional features that define over the applied reference. For example, claim 5 recites the control unit is arranged inside the body of the rock breaking machine and at least some of the sensors are part of the control unit. The Office Action asserts that it would have been obvious to locate the control unit 7 inside the body of the rock drill 4a to provide additional protection of the control unit from the environment, since rearranging of parts of an invention involves only routine skill in the art. However, the rock drill 4a is exposed to vibrations, heat, blows, moisture, dirt, etc. Therefore it would not be obvious to place the control unit 7 in the rock drill 4a. When placed on the base 1, as taught by Tuunanen, the control unit 7 is better protected.

In any event, Tuunanen fails to teach or suggest the combination of features recited in claim 4, from which claim 5 depends. MPEP § 2143.03 points out that "[t]o establish prima facie obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)."

At least for the above-described reasons, Applicant respectfully asserts that the rejection of claims 1-3 under 35 U.S.C. § 103(a), the rejections of claim 4 under 35 U.S.C. § 102(b), and the rejection of claim 5 under 35 U.S.C. § 103(a), should be withdrawn in whole.

New Claims 6-10

Applicant has added new claims 6-10. Support for new claim 6 is provided at, for example, claim 4 and 5. Support for new claim 7 is provided at, for example, paragraph 0013 of Applicant's specification. Support for new claim 8 is provided at, for example, paragraph 0015 of Applicant's specification. Support for new claim 9 is provided at, for example, paragraph 0019 of Applicant's specification. Support for new claim 10 is provided at, for example, paragraph 0019 of Applicant's specification. Claims 6-10 are allowable at least for reciting allowable features recited in claims 1-5 as discussed above. Examination of new claims 6-10 is requested.

CONCLUSION

In view of the foregoing, Applicant submits that the pending claims are in condition for allowance, and respectfully requests reconsideration and timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicant's undersigned representative to expedite prosecution. A favorable action is awaited.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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Dated: May 17, 2006

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